

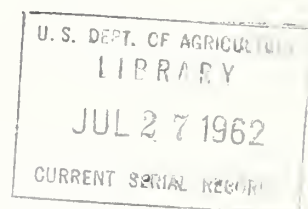
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LETTUCE PREPACKAGED AT SHIPPING POINT

A Preliminary Market Survey



AMS-481

U. S. DEPARTMENT OF AGRICULTURE

Agricultural Marketing Service

Transportation and Facilities Research Division
and
Fruit and Vegetable Division

Preface

Interest has been growing rapidly in the trimming and prepackaging of lettuce at shipping point. Reducing the weight of the head by removal of the outer wrapper leaves permits large savings in transportation costs. In 1960, researchers of the Agricultural Marketing Service initiated, on a very limited scale, test shipments of trimmed western lettuce in a newly developed cling-wrap of shrinkable film. Findings were promising but not sufficiently conclusive to permit making specific recommendations to the industry.

A few shippers began marketing film-wrapped lettuce in 1961. At the request of lettuce growers who were reluctant to make rather heavy investments in packaging machinery and equipment until they had more facts, the Transportation and Facilities Research Division and the Fruit and Vegetable Division of AMS joined forces to inspect some of the early commercial shipments arriving in eastern terminals between January and March 1962, and to determine the reaction of the trade to the new method of packaging.

This preliminary survey of findings and of comments from lettuce traders and merchandisers is issued so that the industry may know of the problems and advantages found thus far, and may reach its own decision on whether and to what degree to try the new method. Studies are continuing and it is planned to publish a later report as soon as findings are conclusive.

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Washington, D. C.

June 1962

Summary

1. Only one lettuce shipper marketed any sizable amount of prepackaged lettuce during the late fall of 1961, but about 10 shippers were marketing prepackaged lettuce during the winter of 1962.
2. Most shrink-film-packaged lettuce has been purchased by chain stores; relatively little has been handled by wholesalers in the terminal markets.
3. Major advantages of shrink-film packaging of lettuce at the shipping point are reductions in freight and in-store handling costs. Quality of shrink-film-wrapped lettuce probably is better, with less bruising and more green leaves left intact.
4. A major problem faced by the grower-shipper using the shrink-film packaging operation is how to market lettuce from a generally poor crop--whether to package under a second-grade label, to put up all lettuce in the regular carton pack, or to do both. Another problem is the effect on consumption, when some film-wrapped lettuce on retail display is unattractive because of butt or leaf discoloration.
5. The USDA Fruit and Vegetable Inspection Service examined a limited number of cars of shrink-film-wrapped lettuce in Philadelphia, New York, Boston, Cleveland, and Detroit from five cooperating shippers during the period January 15-24 and February 28-March 16. Quality of the lettuce inspected was better than that of lettuce in regular-pack cartons, but its appearance often was not good because of slight wilting and discoloration of butts and leaves. Sizing of heads in shrink film often was more irregular.
6. USDA Market News representatives in Boston, New York, Philadelphia, Pittsburgh, Cleveland, St. Louis, and Chicago compared prices and quality of shrink-film-wrapped and regular-pack lettuce. The survey was confined to terminal markets and covered mostly independents and small chains who were generally unfavorable toward the shrink-film pack, giving as reasons:
 - (a) Discoloration and poor appearance.
 - (b) Irregular sizing.
 - (c) Inability to judge freshness and solidity.
7. Prices received by terminal market wholesalers for shrink-film-wrapped lettuce generally were slightly lower than for regular carton-pack lettuce with comparable count sizes, due partly to buyer resistance and to freight savings. Shippers customarily charge a premium of 25-50 cents per carton for shrink-film-wrapped lettuce.
8. Four of the largest chainstore organizations and some regional chains were contacted to obtain their reactions to lettuce prepackaged at shipping point. Their comments fell into the following general categories:
 - (a) They got excellent-quality prepackaged lettuce last fall but it varied considerably during the winter.
 - (b) They were generally dissatisfied with the lack of uniformity of sizing of prepackaged lettuce.

- (c) Store customers complained about discoloration of the lettuce leaves; probably this was due to freeze damage, but possibly to damage during heat sealing and shrinking. Discoloration of the butts was often mentioned but was not considered a major problem.
- (d) Many consumers complained about the brittleness of the film, although the chains generally agreed it was not a serious problem. Some divisions of major chains are now buying pre-packaged lettuce exclusively. Their chief concern was whether shippers would continue to pay enough attention to proper sizing and quality control.

Shrink-Film Packaging of Lettuce at Shipping Point

Shrink-film packaging of lettuce was developed initially by Agricultural Marketing Service packaging specialists in January 1960, in a Washington, D. C., chainstore packaging plant. It was abandoned because of the high labor cost of removing lettuce from cartons, trimming it, and packing it back into the cartons for distribution in retail stores; and the problem of disposing of the waste.

Test shipments were made from Salinas, Calif., during the summer of 1960, and again in 1961. Most of these tests indicated that polystyrene film was a 'safer' film to use than the other films, which were generally more moisture-proof. It is 'safer' in that it allows some dehydration, helping to prevent sliming and decay--particularly if the lettuce is not properly refrigerated. Some Salinas shippers made a few commercial shipments during the late summer of 1961, and one shipper began shipping in sizable quantities out of Salinas in the late fall of 1961. These shipments and the attendant publicity stimulated great activity on the part of the lettuce industry.

About 10 lettuce shippers made commercial shipments of shrink-film-wrapped lettuce out of the Imperial Valley, California, and Yuma, Ariz., areas during the winter season of 1962.

The outstanding advantage of shrink-film packaging is the reduction of freight costs. According to L. M. Cox, Western Growers Association traffic manager, savings in freight amount to \$231 a car for a 700-carton load from California to New York. The freight per carton of prepackaged lettuce weighing 31 pounds is 98 cents, compared to \$1.31 for an equivalent 47-pound carton of regular pack. One receiver estimated that it will eventually cost him more to buy untrimmed lettuce in cartons than shrink-film-wrapped lettuce, because of this difference in freight costs. This difference will be accentuated when piggyback shipments begin with 50,000-pound trailer loads (shipped two to a railroad flatcar) on which refrigeration charges will be equivalent to those now paid for a single refrigerator car.

Another advantage is that the consumer may get a better head of lettuce, with less bruising and more green leaves remaining intact and edible (even though she has to discard one discolored leaf because of dehydration), than she would be getting, on the average, if the lettuce were shipped untrimmed and perhaps badly bruised from bulge packing, thus requiring extensive trimming at the retail store. Other advantages to prepackaging lettuce at shipping point, also are claimed. Some growers report higher yields of marketable lettuce when

it is prepackaged at the shipping point, because, even though a head of lettuce may be unmarketable if untrimmed, it frequently can be prepackaged if the outer damaged leaves are trimmed off. It may be possible to use lighter test weight and cheaper cartons by dropping from a 47-pound pack to a 31-pound pack. Also, considerable savings in retail labor and packaging costs should be realized by the retailer even if he does need to retrim some shrink-film-wrapped lettuce because of poor appearance.

The outstanding disadvantage of prepackaging of lettuce at shipping point is the problem of handling poor quality lettuce and the problem of discoloration and unattractive appearance of some shrink-film-wrapped lettuce on retail store display. It is still too early to assess the ultimate importance of these problems.

Inspection Survey, by Markets

Observations by the Inspection Service at shipping points indicated that some shippers were packing only their better lettuce in shrink film, while others were packing the same quality in both shrink film and regular cartons. Sporadic shipments by most cooperating shippers, because of freeze damage and the experimental nature of their operation, made it impracticable to observe the same cars both at shipping point and in the terminals.

A limited number of cars of shrink-film-wrapped lettuce were examined in five eastern terminal markets--Philadelphia, New York, Boston, Cleveland, and Detroit--during the periods January 15-24 and February 28-March 16. Two freezes in Arizona and California necessitated interrupting the survey from January 24 to February 28. Most of the lots of shrink-film-wrapped lettuce had been purchased by chains and some by the Defense Subsistence Supply Center; only a very few had been purchased by wholesale receivers. These cars represented shipments by five grower-shippers in the Imperial Valley and Yuma areas who granted permission to examine their lettuce.

Philadelphia.--More lots of shrink-pack lettuce were examined in Philadelphia than in other locations. Most of these represented cars which were purchased by chains or by the military. Lettuce in shrink-film pack was fresh and crisp with good color. Generally, a few outer midribs showed light pink to pink. Butts were generally pink. No decay was noted.

Quality and condition of cars of lettuce purchased by the Defense Subsistence Supply Center were very good. Camp commissaries receiving the lettuce liked it, and kept requesting it regularly.

Several cars of shrink-pack lettuce delivered direct to chainstore warehouses were inspected. Quality of the heads, as well as size and shape, seemed to be somewhat better in film wrap than in regular cartons. Chainstore buyers preferred film wrap, packed 24 heads (rather than 18 or 20 heads) to the carton. There was some criticism by the chains that the shrink film seemed to magnify appearance factors such as pink midrib, tipburn, and discoloration.

Boston.--Shrink-pack lettuce was mostly fresh and crisp, with some discoloration of midribs following bruising. Butts showed light pink to light brown or reddish discoloration. Two cars showed very slight decay.

Cleveland.--Quality of shrink-pack lettuce was good, but appearance was not outstanding. At the base of some heads, there was slight wilting of the outer leaves and a light brown discoloration. Butts generally were light brown.

Detroit.--Shrink-pack lettuce was received with enthusiasm by practically all chains and terminal receivers. Both agreed that shrink-pack lettuce was better in quality and condition, and had greater keeping quality and better appearance than the regular carton pack. There was criticism, however, of the irregularity in sizes of heads and the loose, slack packs of shrink-wrapped lettuce.

New York.--Only one car of shrink-pack lettuce was examined. This lettuce was fresh, crisp, and of good color, with few heads showing light brown discoloration on margins of one or two leaves. There was slight drying out of portions of outer leaves. Midribs were generally of good color; butts were mostly pink, some light brown to brown.

Market News Survey of Wholesale Receivers

Market News reporters conducted a survey of shrink-film-packed lettuce in seven of the major terminal markets--Boston, New York, Philadelphia, Pittsburgh, Cleveland, St. Louis, and Chicago--from January 15 to January 24 and from February 28 to March 16 to determine acceptance of the new film wrap and prices in comparison with those of regular-pack lettuce.

Receipts of shrink-film-wrapped lettuce by wholesale receivers in the terminals were light. Three of the largest terminals showed the lightest volume. New York City wholesalers during the first period of study received only three carlot equivalents of film pack in a total of 182 cars unloaded. Chicago also was extremely light. Philadelphia wholesalers received only one lot of film wrap during the first period of study and only 150 to 300 packages most days during the second period. Most receipts were of one brand, but several other labels were represented.

Prices received by wholesalers for the film pack ranged from below to equal those of the regular pack, but in most instances slightly below for comparable sizes. In a few instances, the film pack sold slightly higher than the regular pack. Occasionally, holdover supplies of the film pack sold sharply lower than fresh arrivals of either the regular or film wrap.

Official quotations of shipping point prices of prepackaged lettuce were unavailable; however, the El Centro, Calif. Market News representative advised that shippers were generally quoting film pack at 25-50 cents, mostly 25 cents, over the comparable size in the regular pack.

The film-wrapped lettuce was packed in cartons No. 7306, both side and top opening, and the WY 54 carton. Head counts were 20s, 24s, and 30s. Most were jumble-pack, but some were place-pack. Sizes ranged irregular to uniform, mostly irregular. Color of butts and midribs ranged light brown to white, mostly pink, and compared favorably with the regular pack. The crinkly-type film was used in practically all lots.

New York.--Most sales were to small chains and retail supermarkets. One retailer reported it was necessary to unwrap, trim, and freshen his supply before being able to sell. In stores, mainly small chains, fair acceptance by the trade was reported. Sales volume of regular pack ranged from 7 to 20 times greater than for the film wrap. Salesmen reported sales of film wrap were generally considered 'hard sales' and the 'come-back' trade was limited. There was a greater objection to discoloration and general appearance of the shrink-

film pack than of regular pack because the retailer was unable to freshen the appearance by trimming. Consistent large-scale buyers of good-quality lettuce appeared to have a definite preference for the regular bulk pack. This was proved in the second period of the study, when no film wrap was offered on the market.

Chicago.--Only one wholesaler received film-pack and he handled only one brand. The market was unsettled, with mixed reactions.

Philadelphia.--Buyers reported that they preferred the regular pack in order to determine the quality they were receiving. Most sellers resisted the film wrap because they thought it would reduce the gamble for profit. They realized that they could receive protection as far as quality is concerned, but were afraid the trading would become like that in film carrots, with just a small markup. The regular buyers for firms other than chains indicated they had received no inquiry for film wrap, but thought it could be forced on the trade if the industry desired. Many were afraid of poor quality and a few said that if the lettuce is not sold readily, it is necessary to unwrap, trim, and wrap again, which is too expensive.

Boston.--The price was lower than on best-quality regular lettuce. Discoloration was reported more of a factor in the film than in the regular pack. There was definite buyers' resistance to the film pack. Most retailers didn't seem to want it. Chain buyers mostly agreed this is the lettuce of the future, but one large chain discontinued buying film pack. The sellers agreed film-pack lettuce operations should not have started until the 'bugs' were out of it. It was difficult to sell film-pack lettuce and the buyers wanted a price discount.

Pittsburgh.--Little difference in the price of film-pack and regular lettuce was noted because the trade refused to pay a premium. They preferred the regular pack if quality and condition were comparable. Small independent retailers who trim lettuce for fresher appearance reported they were not interested in buying film pack because of the increased labor of unwrapping and rewrapping. The large chains which move considerable volume reported they could sell lettuce before it needed much trimming. Some buyers reported quality irregular in the film pack and they were afraid of it. Later arrivals were of somewhat better quality.

Cleveland.--Purchases were mostly by independent stores, occasionally by small chainstores. Discoloration on stumps was a slight factor. However, little or no midrib discoloration was apparent. Buyers were resisting purchases, as they would rather trim and wrap their own lettuce. Sellers indicated the lettuce was easy to handle and display in stores; however, they preferred more uniformity of heads.

St. Louis.--Buyers were mostly jobbers and small chains. Prices ranged about the same to slightly less compared to regular pack. Discoloration curtailed sales to some extent. The film seemed to magnify discoloration of butts, but tended to camouflage other defects such as lack of solidity and freshness. There was some buyer resistance on the ground that adequate inspection through the film is not possible. Some of the film-wrap lettuce was of excellent quality; some was considerably off quality. General opinion was that film-wrap lettuce should be a premium-quality pack and should bring a premium price, but the film wrap in itself was not worth a premium.

Following are letters to the Transportation and Facilities Research Division from representatives of four chainstore organizations. The general tone of the letters shows a favorable reaction to shrink-film-wrapped lettuce. The writers appreciate the problems, particularly those associated with poor quality. Also, they realize the importance and problems of handling prepackaged lettuce properly. They are not much concerned over premium prices they may have to pay for shrink-film-wrapped lettuce, because they realize these will be more than offset by savings in freight and in retail labor and packaging costs.

January 29, 1962

Dear Sir:

We think it is fine that your Department is getting interested in pre-packaged lettuce, as all the bugs are not yet ironed out of the program.

I shall attempt to answer your questions in rotation.

We have had no rejections, arrivals have been very good, and it has been holding up extremely well at store level.

We would prefer a place-pack inasmuch as this would make a tighter container and would cut down on breakage.

We have not had any great opposition as to the price differential, as we feel that we more than make this up through decreased use of labor and packaging materials. We also found that in the initial stages we were able to sell all of the lettuce in the carton. I say initial stages because in the last few weeks quality and size standards have broken down miserably.

There is a definite lack of uniformity in prepackaged lettuce. ... It may be that we will need tightening up in some manner at shipping point on this matter of sizing. We have received from puff balls to size 30 to size 18 in the same cartons of prewrapped lettuce.

It has been our experience to date, with the few loads that we have had where the lettuce was wrapped in packing sheds, that we had better quality, better sizing, and a better wrapping job. [A shipper] who wraps in the field needs to improve on his wrapping, as too many heads are exposed, which causes browning.

Our main complaints as of now on wrapped lettuce are poor wrapping, lack of uniformity in sizing, and, strange as it may seem, from the consumer we are getting a few complaints that she does not like the feel of ...polystyrene... film.

We also have another problem of our own making. In visits to stores ... in the last few weeks I have found that our store people are now treating lettuce as they would a bag of carrots. First of all, they overdisplay because it is so easy to dump it on the rack, and second and worst of all, they leave it there. Rotation and freshness has definitely gone by the board and this retailer problem I am sure is not confined to ---our company. ...

At some recent meetings we brought this problem to light with our produce merchandisers ... and it appears that we must go to some kind of dating method which will help to insure rotation and freshness.

The wrapping of lettuce, which we were among the first to promote, still has a long way to go and we certainly need your help.

Sincerely,

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January 18, 1962

Dear Sir:

So far our experience with prepackaged lettuce has been satisfactory as to the trim of the heads, arrival condition, shelf life, and customer acceptance. Also we have found ~~half~~ the heads salable. There are times when the film is brittle and then cracks or splits and holes are chafed through the film where the head is in contact with the carton.

There are times when the wrapped heads are fairly uniform as to size but in many cases the various sized heads are mixed together. This is also true with the unwrapped heads. ...

The Arizona shippers are apparently trying to correct this condition by packing 24's, 22's, 20's, and 18's with the 24's and 22's priced at 50 cents above that for the unwrapped 24's and the 20's and 18's at 25 cents above. This of course proves a real problem in retail pricing and we do not have the answer.

As you know, the billing weight for the wrapped and unwrapped lettuce is 31.0 and 43.0 pounds, raised to 47 pounds in February, respectively. Due to the incentive freight rates, the number of packages per car must be naturally increased to avoid a penalty. It would appear from the attached sheet table 1/ that to get the delivered prices reasonably close together the 30,000-pound load of unwrapped lettuce would need to be increased to 40,000 pounds or more for the wrapped. This would give an increase of 36 to 40 percent in the number of cartons and in the number of heads.

The delivered price of the wrapped lettuce, packed 24's shipped in the heavy load, is reasonably close to the delivered price of the unwrapped, but you will note that the price of the 20's is noticeably higher.

We would appreciate receiving a copy of the report on your survey.

Very truly yours,

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Table 1.--Comparison of delivered costs of lettuce -- Arizona and Imperial Valley to New York City, January 1962

Item	Unwrapped			Wrapped		
	Standard car	Mechanical car	Ice-tempco car	Standard car	Mechanical car	Ice-tempco car
No. cartons per car	700	960	700	954	1,350	936
Weight (pounds)	30,100	41,230	30,100	29,593	41,850	29,016
Freight rate per cwt. 1/.....	\$2.40	\$2.09	\$2.40	\$2.40	\$2.09	---
No. heads per car						
24's	16,800	23,040	16,800	22,896	32,400	22,464
22's	---	---	---	20,988	29,700	20,592
20's	---	---	---	19,080	27,000	18,720
18's	---	---	---	17,172	24,300	16,848
Costs						
Freight @ \$2.40 cwt.	\$722.40	\$862.75	\$722.40	\$710.23	\$874.66	\$696.38
Refrigeration per car	<u>95.002/</u>	<u>121.67</u>	<u>95.00</u>	<u>95.00</u>	<u>121.67</u>	<u>95.00</u>
	\$817.40	\$984.42	\$817.40	\$805.23	\$996.33	\$791.38
Lettuce						
Unwrapped 24's \$1.75 :	1225.0	1680.00	1225.00	---	---	---
Wrapped 24's 2.25 :	---	---	---	2146.50	3037.50	2106.00
22's 2.25 :	---	---	---	2146.50	3037.50	2106.00
20's 2.00 :	---	---	---	1908.00	2700.00	1872.00
18's 1.75 :	---	---	---	1669.50	2362.50	1638.00
Per head 24's1216	.1156	.1216	.1289	.1245	.1290
22's	---	---	---	.1406	.1358	.1407
20's	---	---	---	.1422	.1369	.1423
18's	---	---	---	.1441	.1382	.1442

1/ Range of freight rates per cwt. - \$2.50 in loads of 20,000 pounds.

2.40 " 30,000
2.30 " 33,000
2.20 " 36,000
2.09 " 40,000

2/ During warm weather the refrigeration charge would be \$121.67.

January 19, 1962

Dear Sir:

Our experience with lettuce prepackaged at the source is very limited and I am afraid that I cannot intelligently answer some of your questions.

Our first experience with prepackaged lettuce was some 4 or 5 years ago when we had a few experimental cartons included in regular lettuce shipments. The results at that time were not satisfactory. The lettuce showed some decay and discolored butts. However, the prepackaged shipments which we have had recently arrived in excellent condition. This lettuce was shrink wrapped and the previous shipments, loose cellofilm wrapped.

It was my impression that this lettuce was handpicked, so to speak; very large heads and good solidity. The difference of nearly 5 cents per head, regular lettuce versus prepackaged, would make some difference until all retail outlets were using this type lettuce. We do prefer a place-pack rather than a jumble-pack or it may be well to go to a shelf-pack similar to that used for shipping packaged cauliflower from the West Coast.

I am also wondering about the receivers' reactions to prepackaged lettuce when the condition and quality of the product is not as good as it has been recently. I am thinking of the tipburn problem which has been so prevalent from the Salinas area for the past 2 or 3 years. The trend is, of course, toward prepackaged produce and I am not sure but that 5 years from now, this is the way all lettuce will be shipped from the West Coast.

Very truly yours,

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January 17, 1962

Dear Sir:

We have had several part-car shipments of prepackaged lettuce, all types of packages, and I must say we have been well pleased with quality on arrival, and it has met with very good consumer acceptance.

We have had shrink wrap in cartons of 18's, 20's, or 24's. We would prefer all 24's providing they did not reduce the head size in order to make 24's. In our operation, the 24 wrapped could be substituted for the 24 naked or vice versa, whenever needed and would save a lot of work in our Tabulating Department.

We have also received jumble-pack and place-pack. Personally, I prefer the place-pack. The price differential, which is generally 50 cents per carton, we feel is moderate and reasonable. On quality, I feel that the average grower and packer will be more selective in shipping prepackaged lettuce than he would a naked pack. At least that has been our experience thus far.

Last week we had a sample shipment of lettuce in a poly bag. To my thinking this was an ideal package. The bag was large enough in order that they could leave several wrapper leaves showing a good, firm, healthy head of lettuce.

Also, upon arrival in the East and into our stores, if needed, the head of lettuce could be removed from the bag and a wrapper leaf removed if necessary and a thin slice taken off the butt.

I really think that packaged lettuce, whether shrink-pack or poly-bag, providing they continue to select the very top quality, will be a natural in our business.

I hope this information will prove helpful.

Sincerely,

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The merchandising manager of the eastern division of one of the major chains commented on April 5:

- (a) His stores received excellent quality lettuce in shrink-film at first but it deteriorated during the winter. In this area, they now handle shrink-film-wrapped lettuce 100 percent.
- (b) The stores got customer complaints when the lettuce came in showing leaf discoloration during the winter, and quit buying the film-wrapped lettuce for a week.
- (c) The shippers should exercise as much control as possible not to prepackage lettuce showing any discoloration. However, the stores have been instructed to retrim those heads which do show discoloration.
- (d) Butt discoloration is not a serious problem.
- (e) Irregular sizing is no worse for shrink-film-wrapped lettuce than the untrimmed pack, but the merchandising manager strongly favors uniform sizing before packing. It is not practical to segregate and price separately in retail stores.
- (f) The stores had no customer complaints about the brittle or hard, crinkly feel of the film; however, they had not previously prepackaged lettuce in soft film (polyethylene or polypropylene bags) at the retail store level.
- (g) Terminal produce buyers don't like shrink-film-wrapped lettuce as a rule, because too many of their customers, such as hotels and restaurants, do not believe it is advantageous to them.

One major chain recently made another survey of the experiences of its various divisions after it had purchased some 125 cars of shrink-film-wrapped lettuce. Many of its people reported customer dissatisfaction with the appearance of the prepackaged lettuce and with the dry, brittle feel of the film.

One regional chain reported it had been buying prepackaged lettuce exclusively for a couple of months and the chain was generally very well satisfied with it. Similar to many others, this chain was somewhat concerned about the consumer's reaction to the feel of the film.

A half-day survey of a number of chainstore supermarkets in the Washington D. C., area, in March, showed five different brands of shrink-film-wrapped lettuce on display. Many of the heads showed leaf, rib, and butt discoloration and there was a great variation in size of heads. However, when the housewife removes one outer leaf which is discolored or slightly wilted from dehydration, there usually still remains a better head of lettuce than is available if heads are trimmed in the store. (about 75 percent of vitamin A is in the darker green leaves). One retail store reported it had sold 185 cartons of shrink-film-wrapped lettuce in the 2-week period prior to the visit. The produce manager reported this represented about a 25 percent increase in sales over his normal movement. This same produce manager commented (and many similar comments were received), that one shipper's shrink-film-wrapped lettuce was generally larger than the other brands.

AMS Plans for Future Research and Service

Because of the interest in shrink-film packaging of lettuce in all producing areas, it is planned to publish a report containing the results of previous test shipments, even though final recommendations or answers to all the problems cannot be given now. Research will be continued during the 1962 summer season. It appears desirable, for example, that a study be made to determine whether application of the refrigeration requirements of the U. S. Fancy Grade to shrink-film-wrapped lettuce would appreciably improve the quality of arrivals in the markets.

Since the Market News and Inspection Service surveys encountered unfavorable conditions for such a study, it has been suggested that another survey be made in a number of markets during August, when the weather is generally the hottest, and quality and appearance problems are most likely to be encountered.

Recent related reports on improved packaging and shipping containers for fruits and vegetables include:

Evaluation of Selected Consumer Packages and Shipping Containers for Peaches, MRR 533, June 1962

Prepackaging Medium-Size Apples in Shrinkable Films at Shipping Point, MRR 534, April 1962

Evaluation of Shipping Trays and Pads for Pears and Apples, MRR 530, April 1962

Evaluation of Shipping Containers for Washington Cherries, MRR 426, September 1960

Packaging California Cauliflower, MRR 414, July 1960

Prepackaging California Grapes at Shipping Point, MRR 410, July 1960

Prepackaging Early California Potatoes at Point of Production, MRR 401, June 1960

Prepackaging Firm Ripe Peaches, AMS-312, June 1959

Evaluation of Shipping Containers for Western Lettuce, MRR 248, July 1958

Evaluation of Shipping Containers for Florida Avocados, MRR 228, May 1958

Packing California Potatoes in Fiberboard Boxes, MRR 214, February 1958

Development of Carrot Prepackaging, MRR 185, June 1957

Fresh Fruit and Vegetable Prepackaging, Northeastern Region, MRR 154, February 1957

New Shipping Containers for Plums, MRR 128, June 1956

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